

DOLLE var. *taiwanica* ト命名サレタモノ。獨立ノ種ト認メ新名ヲ付シタ。

5. **たうくさぼたん** (*Clematis heracleifolia* DE CANDOLLE)

北支那及び南滿ノ産。コノ種ノ異名中ニ *Clematis tubulosa* TURCZANINOW ヲ入レルノハヨクナイ。支那中部ニハ var. *ichangensis* REHDER & WILSON ナル變種ガアルガ原標本ヲ見ナイノデソノ確實ナ分類學的位置ヲ云々スルコトガ出来ナイノハ遺憾デアル。

6. **るりくさぼたん** (*Clematis tubulosa* TURCZANINOW)

北支那、滿洲及び朝鮮ノ産。從來 *Clematis heracleifolia* var. *Davidiana* 又ハ *Clematis Davidiana* DECAISNE ノ名デ呼バレテ來タモノ。ソレヨリ早イ TURCZANINOW 氏ノ名ヲ採用シタ。

7. **たかねくさぼたん** (*Clematis tsugetorum* OHWI)

臺灣北部ノ産。可憐ナ一種デ丈低ク葉モ小サイ。花ハ葉腋又ハ莖頂ニ通常單生スル。

Studies on Fresh-water Diatoms of Western Japan (III)*

By

Yasumi IWAHASHI

岩橋八洲民： 西部日本ノ淡水産硅藻 (其三)

X. *Fragilaria* (LYNGB.) AG.

There are six species and five varieties belonging to *Fragilaria* found from the fresh water of Japan. They have been reported by H. HATTORI, H. NAKANO, FR. MEISTER and FR. HUSTEDT, as follows :

<i>Fragilaria capucina</i> DESM.	<i>F. lapponica</i> GRUN.
<i>F. crotonensis</i> KITT.	<i>F. construens</i>
var. <i>media</i> SCHR. et VOGL.	var. <i>binodis</i> GRUN.
var. <i>curta</i> SCHR. et VOGL.	var. <i>genuina</i> GRUN.
<i>F. virescens</i> RALFS	<i>F. intermedia</i> GRUN.
<i>F. parasitica</i> SM.	<i>F. pinnata</i> var. <i>lancettula</i> HUST.

H. HATTORI already has reported that *F. capucina* and *F. crotonensis* occurred in water from the water mains, in Kobe and Nagasaki. But, unfortu-

* 本研究ニ關スル材料蒐集ニ當ツテ日本學術振興會カラノ援助ニ負フ所が大デアル。コ
コニ深ク感謝ノ意ヲ表スル。

nately, I have not known the other report of *Fragilaria* of Western Japan.

Frustules usually in short or long filaments, at length becoming free. Valves without raphe and costæ, striated by the transversal lines.

1. ***Fragilaria virescens* RALFS** : Boyer, Syn. North Amer. Diat. I, p. 184, 1927; Hustedt, Bacillar, p. 143, fig. 144, 1930 ; Journ. Japan. Bot. Vol. X, No. 7, p. 447, fig. 3, 1934.

Cells in ribbon-form. Valves linear or linear-elliptical with attenuated ends. Length 14–17 μ , breadth ca. 5 μ . Striæ 14–16 in 10 μ .

Hab. In mountain-streams.

Kyûshû : Hita, prov. Bungo (Y. IWAHASHI, Dec. 1935).

Yakushima : Ambô-Kosugidani (Y. IWAHASHI, July 1933).

Dist. Europe ; North America ; Africa.

2. ***Fragilaria capucina* DESMAZIERES var. *acuta* (EHR.) RABENHORST** : Schonfeldt, Diat. Germ. p. 101, 1907; Boyer, Syn. North Amer. Diat. I, p. 187, 1927 ; Hustedt, Kiesalg. 2 Teil, lief. 1, p. 145, 1931.

Valves linear-lanceolate, with wedge-shaped, acute poles. 20–23 μ long, 4–5 μ wide. Axial area narrow, linear. Central area elliptical. Striæ 18–20 in 10 μ .

Hab. In ditch.

Honshû : Toyama, prov. Etchû (Y. IWAHASHI, Oct. 1935)

Dist. Europe ; North America.

This form is new to the flora of Japan.

3. ***Fragilaria elliptica* SCHUMANN** : Schonfeldt, Diat. Germ. p. 100, Taf. 4, fig. 365, 1907 ; Meister, Kiesalg. Schw. p. 66, Taf. VI, fig. 4, 1912.

Valves elliptical. Length 6–11 μ , breadth 3–5 μ . Transversal striæ ca. 14 in 10 μ . Axial area linear and lanceolate.

This species are like *Fragilaria mutabilis* Grun., but striæ of the former are finer than the latter.

Hab. In ditch and stagnant water.

Kyûshû : Beppu, prov. Bungo (Y. IWAHASHI, Jan. 1934).

Dist. Europe ; Africa ; China.

This species is new to Japan.

4. **Fragilaria construens** (EHR.) GRUNOW : Schonfeldt, *Diat. Germ.* p. 101, Taf. 5, fig. 36, 1907 ; Hustedt, *Bacillar.* p. 140, fig. 135, 1930.

Frustales united in ribbon-like colonies. Valves strikingly inflated, with produced, rounded ends, and so, cross-shaped, 10–16 μ long, 7–9 μ wide in the middle. Marking fine, Striæ ca. 13 in 10 μ . Pseudoraphe lanceolate.

Our specimens from Iwakuni, prov. Suô, resemble to the figure which are illustrated in SCHONFELDT'S *Diat. Germ.* Taf. 5.

Hab. In ditch, ponds and stagnant water.

Honshû : Hiroshima, prov. Aki (Y. IWAHASHI, April 1834) ; Iwakuni, prov. Suô (Y. IWAHASHI, April 1935) ; Chôfu, prov. Nagato (Y. IWAHASHI, Aug. 1935).

Dist. Europe ; North America ; Africa ; India ; Manchoukuo.

This species is new to the flora of Japan.

var. **binodis** (EHR.) GRUNOW : Hustedt, *Bacillar.* p. 141, fig. 137, 1930.

Syn. *Fragilaria binodis* EHRENBURG in Meister's *Kiesalg.* Schw. p. 68, Taf. VI, fig. 9, 1912.

Valves constricted in the middle part. Length 28–24 μ , breadth 7–9 μ at the inflated and 4 μ in the middle part. Transversal striæ 13–15 in 10 μ . Axial area linear-lanceolate.

This form reported by Hustedt from Aoki-ko, (1923), occurs generally with the species.

Hab. In ditches and ponds.

Honshû : Hiroshima, prov. Aki (Y. IWAHASHI, April 1934) ; Iwakuni, prov. Suô (Y. IWAHASHI, April 1935)

Dist. Europe ; North America ; Africa.

var. **venter** (EHR.) GRUNOW : Hustedt, *Bacillar.* p. 141, fig. 138, 1930.

Valves elliptic-lanceolate, Length 10–15 μ , breadth 5–6 μ in the middle. Striæ 14–16 in 10 μ .

Hab. In the lake and stagnant water.

Honshû : Kibagata, prov. Kaga (Y. IWAHASHI, Oct. 1935) ; Iwakuni, prov.

Suô (Y. IWAHASHI, April 1935)

Kyûshû : Kumamoto, prov. Higo (Y. IWAHASHI, Aug. 1934).

Dist. Europe; Africa.

This is new to the flora of Japan.

var. **subsalina** HUSTEDT in Kiesalg. 2 Teil, Lief. 1, p. 159, fig. 670 s. 1931.

Valves linear-lanceolate, 17–32 μ long. about 4 μ wide. Striæ about 15 in 10 μ .

This is looked upon as a brackish form, but Fr. Meister has found it in the fresh water of Kashmir, 1932. I have found it, not only in the brackish water, but also in the fresh water of our country.

Hab. In ditch (brackish water) and stagnant water (fresh water).

Honshû : Marifu, prov. Suô (Y. IWAHASHI, April 1935); Iwakuni, prov. Suô (Y. IWAHASHI, April 1935).

Dist. Europe; India.

This variety is new to the flora of Japan.

fo. **arcus** IWAHASHI, fo. nov. Fig. 10, e.

Valvis arcuatis; 15–20 μ longis, medio 2–3 μ et sub polis 3–5 μ latis; margine ventrali in media parte demergo; striis transversalis ca. 15 in 10 μ .

This form might be taken for a abnormal type of the variety.

Hab. In stagnant water.

Honshû : Iwakuni, prov. Suô (Y. IWAHASHI, April 1934)

5. **Fragilaria brevistriata** GRUNOW : Boyer, Syn. North Amer. Diat. I, p. 190 1927 Hustedt, Bacillar. p. 145, fig. 151, 1930.

Valves linear-lanceolate or lanceolate, with round ends. Length 14–30 μ , breadth 5–7 μ . Striæ short, marginal, 13–15 in 10 μ . Axial area very broad, hyaline.

Hab. In ponds and stagnant water.

Honshû : Iwakuni, prov. Suô (Y. IWAHASHI, April 1934)

Kyûshû : Beppu, prov. Bungo (Y. IWAHASHI, Jan. 1934); Kumamoto, prov. Higo (Y. IWAHASHI, Aug. 1934).

Yakushima : Ambô-Kosugidani (Y. IWAHASHI, July 1933).

Dist. Europe; North America; Africa; China.

This species is new to the flora of Japan.

6. **Fragilaria bidens** HEIBERG: Boyer, Syn. North Amer. Diat. I, p. 188, 1927; Hustedt, Kiesalg. 2 Teil, Lief. 1, p. 147, 1931.

Valves linear-lanceolate, slightly constricted in the middle, with scarcely recognized rostrate ends. Length 29–40 μ , breadth 2–4 μ in the middle, 4–6 μ in the subpolar parts. Striæ 16–18 μ in 10 μ . Axial area linear, narrow and central area extend to the margins at which valve-margins are tumid.

Hab In ditch.

Honshû: Kanazawa, prov. Kaga (Y. IWAHASHI, Oct. 1935).

Dist. Europe; North America; Africa.

This species is new to Japan.

7. **Fragilaria pinnata** EHRENBURG: Hustedt, Kiesalg. 2 Teil, Lief. 1, p. 160, fig. 671 a–i, 1931.

Cells small, united in long filaments. Valves elliptical, with striking striation on the valve surfaces, striæ 10–12 in 10 μ . Length 6–14 μ , breadth 4–6 μ . Pseudoraphe linear, very narrow.

Hab. In stagnant water and ditch.

Honshû: Hiroshima, prov. Aki (Y. IWAHASHI, June 1934).

Yakushima: Kosugidani-Hananoegô (Y. IWAHASHI, July 1933).

Dist. Europe; India; China.

This species is new to the flora of Japan.

var. **lancettula** (SCHUMANN) HUSTEDT in Bacillar. p. 142, fig. 142, 1930.

Valves lanceolate or rhomboid, with slightly subrostrate ends 4–15 μ long, 3–5 μ wide.

FR. HUSTEDT pointed out this form existing among the material of Aoki-ko (1923), and recently I found it from Western Japan.

Hab. In stagnant water, mixed with the species.

Honshû: Hiroshima, prov. Aki (Y. IWAHASHI, June 1934).

Shikoku: Kotohira, prov. Sanuki (Y. IWAHASHI, Dec. 1936).

Dist. Europe; Africa.

8. **Fragilaria leptostauron** (EHR.) HUSTEDT in Kiesalg. 2 Teil, Lief. 1,

p. 153, fig. 668, a-f, 1931.

Valves cruciform. Length $16-24\ \mu$, breadth $5-12\ \mu$ in the middle. Pseudo-raphe lanceolate, narrow. Striae robust, $8-10$ in $10\ \mu$, radiating.

The microtheca of this species resembles to var. *rhomboides*.

By this fact, I think that var. *rhomboides* may be the microtheca of this type.

Hab. In pond and stagnant water.

Kyûshû: Kurume, prov. Chikugo (Y. IWAHASHI, Aug. 1935); Kumamoto, prov. Higo (Y. IWAHASHI, Aug. 1934).

Dist. Europe; North America; India.

This species is new to Japan.

var. **rhomboides** GRUNOW: Hustedt, Kiesalg. 2 Teil, 1, p. 154, fig. 668 g, 1931.

Valves rhomboid, with slightly concave sides. Length $12-14\ \mu$, breadth ca. $5\ \mu$. Striae $8-9$ in $10\ \mu$.

Hab. In pond.

Kyôshû: kumamoto, prov. Higo (Y. IWAHASHI, Aug. 1934).

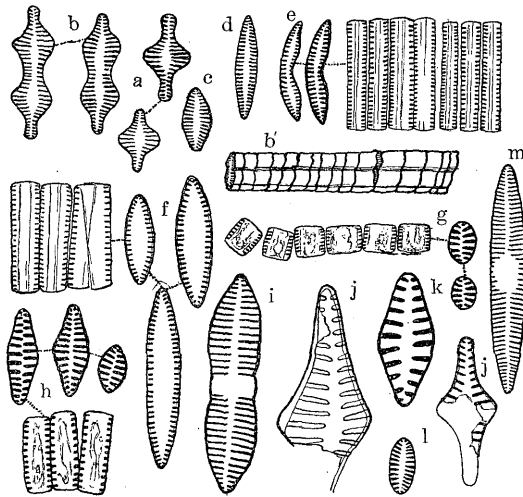


Fig. 10. a *Fragilaria construens* ($\times 800$), b var. *binodis* ($\times 800$) b' ($\times 350$), c var. *venter* ($\times 800$), d var. *subsalina* e fo. *arcus* ($\times 800$); f *F. brevistriata* ($\times 800$); g *F. pinnata* ($\times 800$), h var. *lancettula* ($\times 800$); i *F. bidens* ($\times 1300$); j *F. leptostauron* ($\times 1300$) j' the same; k var. *rhomboides* ($\times 1300$); l *F. elliptica* ($\times 800$); m *F. capucina* var. *acuta* ($\times 1300$)

Dist. Europe.

This variety is new to the flora of Japan.

XI. *Rhoicosphenia* GRUNOW

The frustules of this genus bear a close resemblance to *Gomphonema*, but the former is distinguished by the bowed (arcuate) girdle view and dissimilar valves.

There is a kind of *Rhoicosphenia* which probably being undescribed, among the materials collected by the author.

Frustules arcuate, wedge-shaped in girdle view. Valves dissimilar: upper valve with pseudoraphe, lower valve with raphe and central area. Striæ transversal.

1. *Rhoicosphenia curvata* (KÜTZING) GRUNOW: Schmidt, Atlas, Taf. 213, figs. 1-14, 19; Suringar, Alg. Japon. p. 17, Taf. 2, fig 30, 1870; Cleve, Syn. Nav. Diat. II, p. 165, 1893; Meister, Kiesalg. Schw. p. 92, Taf. XII, figs. 1-3, 1912; Journ. Coll. Sci. Imp. Univ. Tokyo, Vol. XL. Art. 4, Taf. III, fig. 19, 1917; Boyer, Syn. North Amer. Diat. II, p. 240, 1927; Hustedt, Kiesalg. 2 Teil, p. 431, fig. 879, 1931.

Valves clavatem with obtuse, rounded apex, and more narrow, obtuse base. Upper valve with a narrow pseudoraphe and parallel striæ 14-16 in 10 μ . Lower valve with a raphe, a narrow axial area; striæ slightly radial, 12-14 in 10 μ . Length 21-40 μ , breadth 5-7 μ .

Hab. On the water plants or decaying branches in the lakes, ponds and streams.

Honshû: Kiba-gata, prov. Kaga (Y. IWAHASHI, Oct. 1935); Atami, prov. Izu (Y. IWAHASHI, April 1934); Yoganoumi, prov. Ômi (Y. IWAHASHI, Oct. 1935); Biwa-ko, Prov. Ômi (Y. IWAHASHI, Dec. 1934); Nara, prov. Yamato (Y. IWAHASHI, Dec. 1934); Hiroshima, prov. Aki (Y. IWAHASHI, April, 1933, Aug. 1934, and Aug. 1936).

Shikoku: Bannô-ike, and Takamatsu, prov. Sanuki (Y. IWAHASHI, Dec. 1936).

Kyûshû: Kokura, Buzen (Y. IWAHASHI, Aug. 1936); Fukuoka, prov. Chikuzen (Y. IWAHASHI, Aug. 1936); Koshikishima (Y. IWAHASHI, Aug. 1934).

Dist. Spitsbergen; Europe; Greenland; North and South America; Africa; St. Paul Island; China;

fo. **maxima** IWAHASHI, forma nov.

Fig. 11, b b'.

Valvis valde magnis, 82–108 μ longis, media 8–10 μ latis; striis ca. 12 in valvis superis, ca. 10 in valvis inferis in 10 μ .

Hab. On the water plants in the ditch.

Honshû: Hiroshima, prov. Aki (Y. IWAHASHI, April 1933, May 1934 and April 1935).

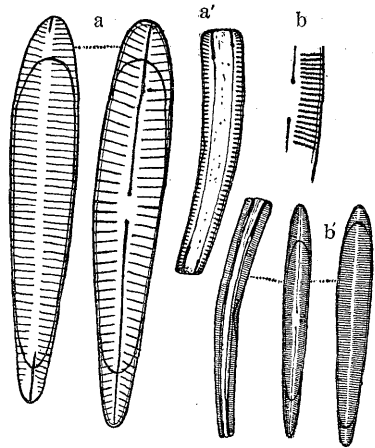


Fig. 11. a *Rhoicosphenia curvata* ($\times 1300$) a' ($\times 800$) b fo. *maxima* ($\times 350$), b' striæ ($\times 800$)

X. *Fragilaria* 属

可成普通ニ見ラレルモノデアリ、且又相當多クノ種類ヲ含ム屬デアル。今迄ニ報告サレテキル邦産ノ *Fragilaria* ハ6種・5變種デ主ニ湖沼カラソノ材料ハ採ラレタモノデアル。尤モ服部廣太郎博士ハ我國ノ主要都市ノ上水道カラノ水ノ中ニ本屬ニ屬スル硅藻ヲ見テ居ラレル。筆者ノ集メ得タ材料中ニアッタ所ノ *Fragilaria* ハ7種・6變種・1新品種デアリ、ソノ中6種・4變種ハ今回新タニ本邦硅藻トシテ附加セラレタモノデアル(*印ヲ附ス)筆者ノ見タモノハ次ノヤウデアル。

- | | |
|--|---|
| 1. <i>Fragilaria virescens</i> RALFS. | 8. <i>F. brevistriata</i> GRUN.* |
| 2. <i>F. capucina</i> DESM. var. <i>acuta</i> RABH.* | 9. <i>F. bidens</i> HEIB.* |
| 3. <i>F. elliptica</i> SCHUM.* | 10. <i>F. pinnata</i> EHR.* |
| 4. <i>F. construens</i> GRUN.* | 11. <i>F. —</i> var. <i>lancettula</i> HUST. |
| 5. <i>F. —</i> var. <i>binodis</i> GRUN. | 12. <i>F. leptostauron</i> HUST.* |
| 6. <i>F. —</i> var. <i>venter</i> GRUN.* | 13. <i>F. —</i> var. <i>rhomboides</i> GRUN.* |
| 7. <i>F. —</i> var. <i>subsalina</i> HUST.* | |

筆者ハ岩國ノ公園内ノ水溜中カラ *Fragilaria construens* var. *subsalina* ト共ニ様態ノ異ッタ種類ヲ見出シタ。殻面ノ横條線ノ様子、殻ノ外廓ハ var. *subsalina* ニ似テキルガ、殻ガ弓形ニ曲ツテキルコト、從ツテ殻面觀ニ於テ背腹ノ兩縁ヲ生ジテソノ腹縁ノ中央ガ凹ンデキルコトガソレトノ差異點デアル。コンナ様子ヲ示スモノハコノ Group中ニ見ルコトハ出來ナイ。コノ新シイ硅藻ハ或ハ var. *subsalina* ノ abnormal type カモ分ラナイト思フガ、出現スル個體ハ一定シタ形ヲシテキルノデ之ヲ新シイーツノ type トシテ var.

subsalina ノ品種トシテ *fo. arcus* トシ、ソノ殻ノ曲ツタ特徴ヲアラハシタ。

XI. *Rhoicosphenia* 屬

本屬ハ *Fragilaria* ニ比ベルト種類ノ少イ仲間デ現在世界中ニ 7 種・6 變種・1 品種ガ知ラレテキル。邦産トシテハ唯一種ヲ舉ゲルコトガ出來ル。即チ *Rh. curvata* ガソレデア。コノ種類ハ全ク普遍的ナモノデアツテ方々ノ淨水中カラ見ラレル。筆者ハ本種ト同様ノ外觀ヲ呈スルモ著シク長大ナル個體ヲ廣島市ノ溝カラ、前後 3 回ニ互ツテ採集シタ。本屬ノ種類中コンナニ長大ナルモノハ他ニ見ラレナイ。ヨツテ之ヲ *Rh. curvata* ノ新品種トシテ *fo. maxima* ト命名シタ)、カクシテ *fo. minor*, var. *major* トノ區別ヲ明カニシタノデア。ル。

Literature (II)

- CLEVE, P.T.: On the Diatoms collected during the Arctic Expedition of Sir George Nares (Journ. Linn. Soc. Bot. Vol. XX, p. 313-317, 1884)
- : Synopsis of Naviculoid Diatoms II, 1894.
- DICKIE, G.: Notes on Algæ from the Hymalayas (Journ. Linn. Soc. Bot. Vol. XIX, p. 230-232, 1882).
- HATTORI, H.: Vorlaufige Mitteilung über das Phytoplankton vom Suwa-See (Bot. Mag. Tokyo, Vol. XXII, No. 259, p. 121-126, 1908).
- : Microbiologische Untersuchungen über einige japanische Wasserleitungen (Journ. Coll. Sci. Imp. Univ. Tokyo, Vol. XI. Art. 4, 1917).
- HUSTEDT, FR.: Bacillariales aus dem Aoki-see in Japan (Archiv für Hydrobiol. Bd. VIII, 155-172, 1923).
- IWAHASHI, Y.: On the vertical Distribution of the Fresh-water Diatoms in Yukushima (Journ. Japan. Bot. Vol. X, No. 7, p. 466-449, 1934).
- : *Neidium maximum* Meist. and *Neidium amphigomphus* Pfitz. (Bot. and Zool. Vol. III, No. 2, p. 428-431; 1935).
- KITTON, ER.: Description of a new Genus of Diatomaceæ and Observations on the Costæ of *Pinnularia peregrina* (Quart. Journ. Microscop. Sci. Vol. VIII, p. 16-17, 1868).
- KÜTZING, F.T.: Species Algorum. 1849.
- LINDSAY, W.: On the Diatomaceæ of Otago, New Zealand (Journ. Linn. Soc. Bot. Vol. IX, 1872).
- MILLS, F.W.: An Index to the Genera and Species of the Diatomaceæ and their Synonyms. 1933.
- MORI, S.: Biological Investigations of Inland Water of Sikoku, especially of Tokushima Prefecture I. Potamoplankton of the Yosino River (1) (Japan Journ. Limnol. Vol. 6, No. 4, p. 155-162, 1936).

- MÜLLER, O.: Bacillariaceen aus dem Nyassalande und einigen benachbarten Gebieten, IV (ENGLER'S Bot. Jahrb. Bd. 45, p. 69-122, 1911).
- : Bacillariaceen aus Süd-Patagonien (Beiblatt zur den Bot. Jahrb. Nr. 100, Bd. LXIII, Heft 4, p. 1-4), 1909).
- 丸山久俊・東道太郎: 日光中宮祠湖並箱根蘆ノ湖産浮游生物 (水産研究誌, 第九卷第十號)
- 中野治房: 本邦湖沼ノ硅藻ニ就テ (植物學雜誌, 第二十六卷, 第三百八號)
- : 日本湖沼植物生態第二報 諏訪湖植物生態ニ就テ (植物學雜誌, 第二十八卷, 第三百二十七號)
- 酒井 徹・相澤金吾: 村上貯水池ニ於ケル化學的諸成分ノ周年變化ト浮游生物ノ消長
- SCHMIDT, A.: Atlas der Diatomeenkunde, Taf. 213.
- SCHÖNFELDT, H.: Diatomaceæ Germaniæ. 1907.
- SKVORTZOW, B.W.: Beiträge zur Kenntniss der Mandschurischen Diatomaceen (Ex. G.B. De Toni "Nuova Notarisia" ser xxxvi, 1925, p. 255-269 anno XL ab inchoata "Notarisia")
- : Ein Beitrag zur Bacillariaceen-Flora der nordöstlichen Mongolei (Hedwigia Bd. LXVIII, pp. 311-314, 1928).
- : Diatoms from Khingan, North Manchuria (Philip. Journ. Sci. Vol. 35, No. 1, p. 39-48, 1928).
- : Diatoms from Poyang lake, Hunan, China (Philip. Journ. Sci. Vol. 57, No. 4, p. 465-476, 1935).
- SMITH, H.L.: Notes on Diatomaceæ found near Gambia (Trans. Microscop. Soc. London, new series, Vol. VIII, p. 33-35, 1860).
- TSUMURA, K.: Some Diatoms from the Clod of Shichimenzan, Kosu, Japan (Journ. Japan. Bot. Vol. XII, No. 10, p. 734-742, 1836).
- : Some planktonic Diatoms from Kasumigaura (Shokubutsu-Shumi, I. ib. V, No. 3, p. 19-23, 1939).
- VAN HEURCK, H.: Synopsis des Diatomees de Belgique 1880-1881.
- WEST, G.S.: Report on the Freshwater Algæ, including Pytoplankton of the Third Tanganyika Expedition conducted by Dr. W. A. Cunningham (Journ. Linn. Soc. Bot. Vol. XXXVIII, No. 264, p. 147-167, 1907).
- WOLLE, FR.: Atlas, Diatomaceæ of North America 1894.